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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,237	11/21/2001	Hiroshi Suganuma	09792909-5265	1922

26263 7590 03/17/2004

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,237

Applicant(s)

SUGANUMA, HIROSHI

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on December 30, 2003, which has been entered.
- By this amendment, the applicant has amended claims 7 and 8.
- Claims 1-8 remain pending in this application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Bloom et al (PN. 5,982,553) in view of the patent issued to Kajiki (PN. 5,694,235) and Kowarz (PN. 6,307,663).

Bloom et al teaches an *image display system* (30, Figure 4) wherein the system is comprised of a *light source having LEDs* (32R, 32G, 32B) for *generating laser beams having wavelengths in predetermined ranges of red, green and blue color*. The laser beams illuminate a *Grating Light Valve* (10), which is an *one-dimensional spatial light modulator*, for modulating the laser beams. The modulated laser beams are then *scanned* by a *scanning mirror* (58) to the location of an observer (64) for displaying an image, (please see Figure 4, and columns 7-9).

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the image display system is a stereoscopic image display system. Kajiki in the same field of endeavor teaches a three-dimensional image reproducing system that is comprised of modulator for

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modulating the light from light sources and scanning system for directing the modulated image light to produce stereoscopic image (15, Figure 9). It would then have been obvious to one skilled in the art to apply the teachings of Kajiki to modify the image display system of Bloom et al to make it capable of displaying stereoscopic images for the benefit of three-dimensional effect to the image displayed.

The Bloom et al reference teaches explicitly that the reflective grating light valve (GLV) array including a row of spaced-apart, elongated movable reflective-members aligned parallel to each other such that “each of the movable reflective-members is **individually** movable with respect to a corresponding fixed reflective-member” which implicitly will be able to give arbitrary (arbitrary read as any desired phase such as the phase distribution taught by the Bloom et al reference) phase distribution, (please see column 2, lines 33-40). However this reference does not teach explicitly that the reflective-members are *independently* driven. Kowarz in the same field of endeavor teaches a spatial light modulator with conformal grating device wherein a plurality of elongated reflective ribbon elements (23a to 23d Figures 1 and 2) are *mechanically* and *electrically isolated from one another* to allow *independent* operation of grating devices defined by the elongated reflective members respectively and implicitly will give arbitrary phase distributions, (please see column 4, lines 11-18). It would then have been obvious to one skilled in the art to apply the teachings of Kowarz to modify the spatial modulator of Bloom et al for the benefit of allowing independent control and operation of each of the reflective-members for the benefit of allowing better control of the spatial modulator therefore better image quality.

With regard to claim 2, Bloom et al teaches that the direction of scanned light is in 45 degrees with respect to the array direction of the Grating Light Valve. Although these references do not teach explicitly that the scanning direction is perpendicular to the array direction such variation is considered to be an obvious matters of design choice to one skilled in the art for the benefit of making the display system to have different arrangement that may be suited for different viewing purpose.

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With regard to claims 4 and 6, Bloom et al does not teach explicitly to include a diffusion panel. Kajiki teaches to use a *diffusion plate*, (which known in the art having the ability of making the light have more uniformly distributed intensity), for reproducing and displaying the stereoscopic image to the observer. It would then have been obvious to one skilled in the art to apply the teachings of Kajiki to modify the image display system of Bloom et al for the benefit of providing more uniformly distributed image to the observer.

With regard to claim 6, Bloom et al teaches to use a lens (50, Figure 4) to *collimate* the modulated light from the Grating Light Valve. Bloom et al also teaches that an image forming lens such as (53 or 55) may be used to focus the image light, (please see Figures 6 and 7). It is known in the art that an image focusing lens has the inherent property of performing Fourier transformation.

3. **Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Bloom et al (PN. 5,982,553) in view of the patent issued to Kajiki (PN. 5,694,235).**

The reasons for rejection are set forth in the previous Office Action dated July 10, 2003.

Response to Arguments

4. Applicant's arguments filed on December 30, 2003 have been fully considered but they are not persuasive.

5. In response to applicant's arguments, which state the cited Bloom et al reference does not teach explicitly that the one-dimensional spatial modulator including one-dimensional arrayed elements that are independently driven to generate an arbitrary phase distribution, which therefore differs from the instant application, the examiner respectfully disagrees for the reasons stated below. The Bloom reference, ((PN. 5,982,553) teaches explicitly that the reflective grating light valve (GLV) array including a row of spaced-apart, elongated movable reflective-members aligned parallel to each other such that "each of the movable reflective-members is individually movable with respect to a corresponding fixed reflective-

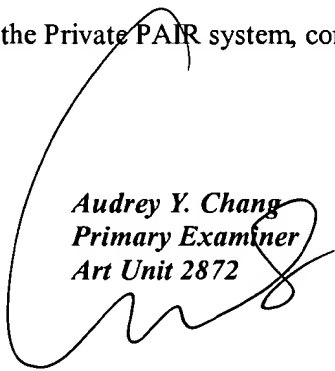
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member which therefore will be able to give arbitrary phase distribution, (please see column 2, lines 33-40). Furthermore, the applicant is respectfully reminded that it is noted that the features upon which applicant relies (i.e., the "independently driven") are not recited in the rejected claim(s) (claims 7 and 8). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Audrey Y. Chang
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.